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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/075,218

02/14/2002

Thomas S. Kobayashi

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12/05/2006

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EXAMINER

FARAHANI, DANA

ART UNIT

PAPER NUMBER

2891

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

AD

Office Action Summary

Application No.

10/075,218

Applicant(s)

KOBAYASHI ET AL.

Examiner

Dana Farahani

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-18, 20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9, 11-18, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 21 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The packaging material being on the fuse is in the parent claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 9, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al., hereinafter Chen (US Patent 6,979,868) in view of Tingerthal et al., hereinafter Tingerthal (US Patent 5,514,449), both newly cited.

Re. claims 1, 9, and 18, Chen discloses in figure 11, a substrate 42 and a passivation layer 60 formed thereon; and a fuse 68 overlying the passivation layer.

Chen does not disclose a packaging material in contact with the fuse.

Tingerthal discloses in figures 1-3, that a packaging material 22 is formed on an interconnect layer. Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to use a mold in contact with the fuse of the Chen reference in order to protect the top of the interconnect therein.

Re. claim 2, a recess is formed in the packaging material in the Tingerthal reference.

Re. claim 20, see Chen, col. 3, lines 25-30, wherein it is stated that the fuse is opened after the MOS transistor is formed. It comes naturally that the fuse should be blown before forming the packaging material. It would have been obvious to one of ordinary skill in the art at the time of the invention to form the mold layer after the fuse is cut off since it would have been easier to cut off the fuse.

4. Claims 11, 12, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US Patent 6,222,212), hereinafter Lee, in view of Nagarajan et al., hereinafter Nagarajan (US Patent 6,519,844), previously cited.

Regarding claims 11 and 21, Lee discloses in figure 8A a semiconductor device comprising a substrate 803 having circuitry 811 and 812 formed in; a passivation layer 804 formed overlying at least a portion of the substrate; and a fuse 813 formed overlying the passivation layer.

Lee does not disclose a packaging material selected from the group consisting of a mold compound and an under fill is over the fuse.

Nagarajan discloses in figure 1D, a mold compound 24 is over a chip 16. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a mold over the chip 802 of the Lee's structure in order to add to the mechanical and chemical strength of the fuse package (see Nagarajan, column 3, lines 38-40).

Regarding claims 12 and 17, recessed areas, as shown in the figure, is formed in the passivation layer, and portion of the fuse (connectors 805 and 808) are in the recess areas.

5. Claims 3-7 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Nagarajan, in case of claims 13-16, and over Chen in view of Tingethal in case of claims 3-7, as applied to claims 1 and 11 above, and further in view of Weber et al., hereinafter Weber (US Patent 6,218,279), previously cited.

Regarding claims 3-6 and 13-16, Lee in view of Nagarajan and Chen in view of Tingethal render obvious the claimed invention, as discussed above, except for expressly disclosing the fuse comprises aluminum and a metal nitride.

Weber discloses a fuse wherein it comprises titanium nitride and aluminum (see column 2, lines 24-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the fuse of the Weber reference in order to benefit from the novel properties of the fuse such as adjustable resistance and easy manufacturing (see column 2, lines 7-12).

Allowable Subject Matter

6. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for indication of allowability of claim 8 is the inclusion therein of the limitations of first and second interconnect and the circuits and their relationship with the fuse.

Response to Arguments

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2891

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DF



Chandra Chaudhari
Primary Examiner